

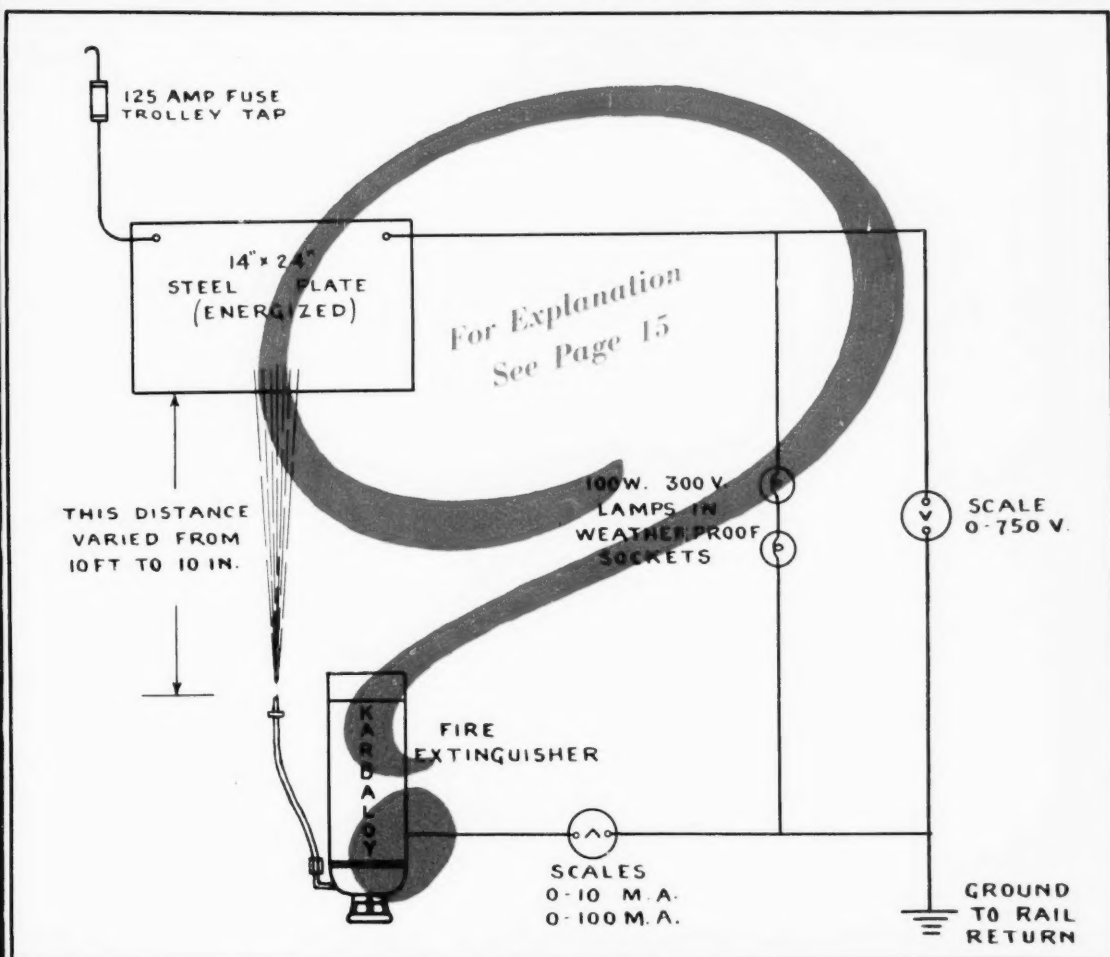
COAL MINING

"The Picture-Book of the Industry"

NOVEMBER 1949

VOLUME XXVI, No. 11

• SECOND ANNUAL MINE SAFETY NUMBER •



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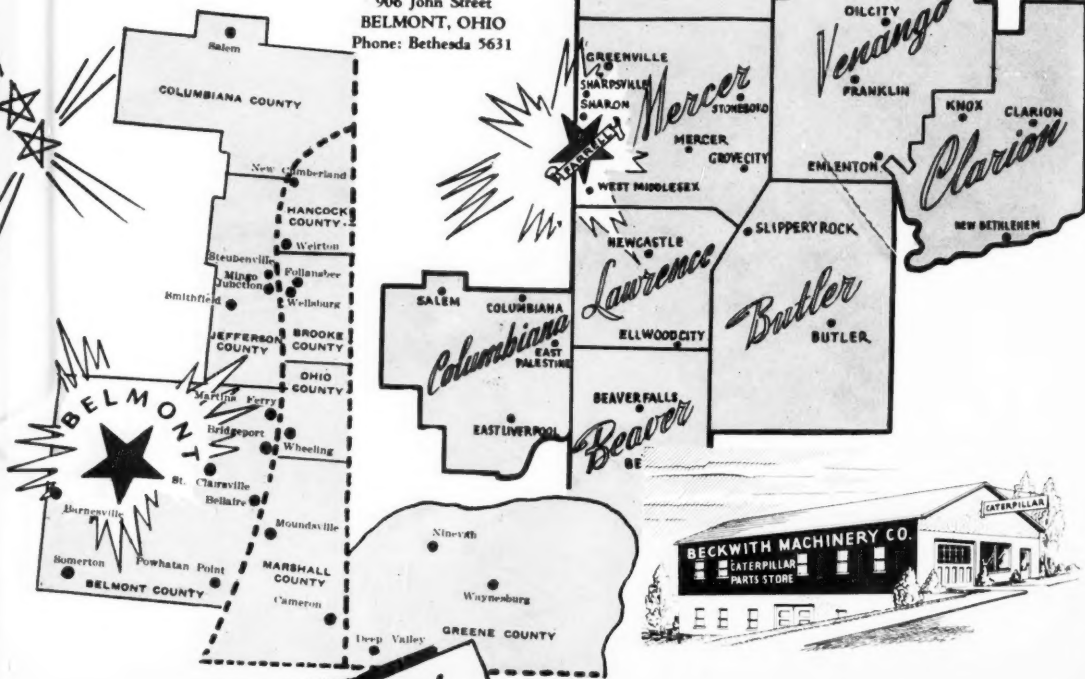
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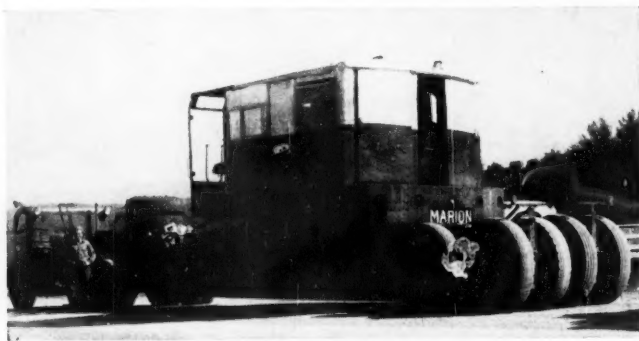
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COAL MINING

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NOVEMBER, 1949

No. 11

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DO YOU KNOW

New light on the relation of corn to the hidden hunger disease, pellagra, appears in a discovery of Dr. Alvin Nason, of the botany department of Columbia University here.

It has long been known that people whose staff of life came from corn rather than wheat were likely to get pellagra unless they got the anti-pellagra vitamin, niacin. Corn does not supply enough of this vitamin to ward off the disease of the ugly rash, sore tongue and disordered mind.

Recently it has been discovered that tryptophan, an amino acid, is a sort of parent chemical to the vitamin, niacin. Animals and bacteria that get tryptophan plus vitamin B6 apparently can make niacin in their bodies.

Now Dr. Nason finds that the embryos of genetically high-niacin corn will synthesize more niacin if they are fed tryptophan. And they do not need any extra vitamin B6 to do it, he adds in a report to the journal, Science.

Tryptophan, however, is probably too expensive to feed to corn in order to increase the plant food's niacin content.

Coal is totally converted into oil, with no tarry or gummy residues and no coke left over, by a new low-temperature process which has been developed and patented by two chemists on the staff of the U. S. Bureau of Mines laboratory in Pittsburgh. The inventors, Drs. Henry H. Storch and Lester L. Hirst, have assigned rights in their patent, No. 2,464,271, royalty-free to the government.

Most familiar of present oil-from-coal hydrogenation processes used in Germany and elsewhere call for very high pressures, on the order of 7,500 to 15,000 pounds per square inch, which are of course quite costly to attain. Low-pressure processes have been tried, but these leave undesirable residues. In the new Storch-First process, moderate pressures of around 1,350 pounds per square inch are employed. Finely ground coal suspended in a synthetic oily medium is put through a stainless steel pressure apparatus, with additional stainless steel to serve as a fixed catalyst. Catalysis is further promoted with a disperse catalyst consisting on a tin compound and a gaseous halogen, preferably iodine or iodoform.

Initial temperature is about 300 degrees Centigrade, and the hydrogen is pre-heated before introduction. From this point there is a gradual build-up to the final temperature of 475 degrees. This temperature increases during the process is stated to be a vital step in the total conversion of the coal, with minimum carbonization.

A powerplant that uses the same steam three times is offered by R. M. Ostermann of Kenilworth, Ill., for patent 2,467,092. Starting out at very high pressure, the steam goes successively through two turbines and finally through a reciprocating engine before reaching the condenser.

Instead of cross-chains, squarish C-shaped hooks, adjustable in size, are used for ground-gripping tread accessories in the invention of Jens A. Boje of Gentofte, Denmark, patent 2,467,654. They are intended primarily for use on trucks that have to cross loose or boggy ground.

Here and There

President Knode of the National Coal Association has just announced the personnel of the National's Safety Committee for the coming year. This is one of the most important committees working for the coal industry. The good work done by all concerned with the safety movement has resulted in a distinct improvement. When the mines reopen there will be many problems confronting the industry. All members are requested to lend their support to the work of the Safety Committee.

Those who will serve on the Committee are: L. C. Campbell (Chairman), Vice Pres., Coal Division, Eastern Gas & Fuel Associates, Pittsburgh, Pa. Birch Brooks, Manager of Operations, Walter Bledsoe & Co., Terre Haute, Ind. James Cassano, Operations Assistant, Utah Fuel Co., Salt Lake City, Utah. D. H. Devonald, Vice-Pres., Peabody Coal Co., Chicago, Ill. David L. Francis, Pres., Princess Elkhorn Coal Co., Huntington, W. Va. P. C. Graney, Pres., Gulf Mining Co., Co., Mount Hope, W. Va. George R. Higinbotham, Vice Pres., Operations, Consolidation Coal Co. (W. Va.) Fairmont, W. Va. Harry Laviers, Vice Pres., South-East Coal Co., Paintsville, Ky. Ralph H. Moore, Vice Pres., Rich Hill Coal Mining Corp., Cresson, Pa. O. B. Pryor, Vice Pres. in Charge of Operations, The Valley Camp Coal Co., Elm Grove, W. Va. George H. Rupp, Manager, Mining Department, Colorado Fuel & Iron Corp., Pueblo, Colo.

The Bird Coal Company, has announced that negotiations have been completed with the Bethlehem Steel Corporation for as acquisition of the Dawson Coal Company near Clarksburg, W. Va. The mine will be operated by the Barnes Coal Company, a wholly-owned West Virginia subsidiary of the Bird Coal Company. The coal will be marketed by the Bird Coal Company. The main office of the Barnes Coal Company will be at 1400 South Penn Square, Philadelphia.

Officers of the Williamson, West Virginia Coal Operators Association for the ensuing year are as follows: President, J. E. Biggs, Jr.; President, H. E. Harmon Coal Corp., Harmon, Va.; Vice President, Laur-

ence E. Tierney, Jr., President, Eastern Coal Corporation, Bluefield, W. Va.; Treasurer, J. D. McLaughlin, President, Earlston Coal Company, Kermit, W. Va.; and Secretary, Joseph J. Ardigo.

President R. H. Knode of the National Coal Association has announced that Henry C. Woods, Vice President of the Sahara Coal Company of Illinois will direct the Committee for Vocational-Training and Education for the National Coal Association.

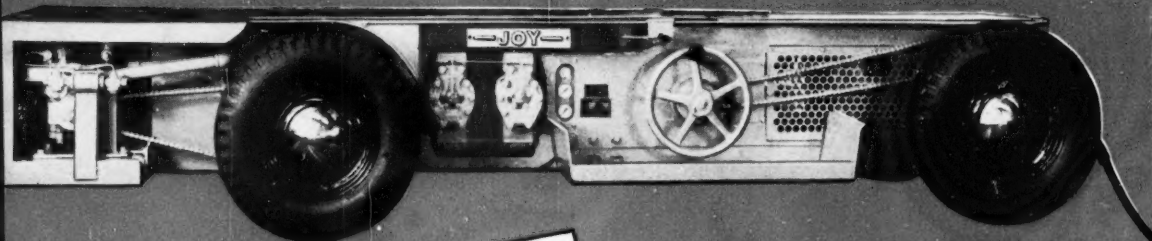
The Black Star Coal Corporation's First Aid team from Alva, Kentucky, won the First Aid Contest held at Middlesboro, Kentucky. The team representing the Kentucky Ridge Coal Company won second place. Third place went to the team representing the Forke Ridge Mine of the Blue Diamond Coal Company.

CORRECTION: On Page 26 of the August issue of COAL MINING, the caption should have read deep mine coal instead of strip coal.

The mine rescue team of the Black Star Coal Corporation, Alva, Kentucky, won the Kentucky statewide championship in mine rescue, held at Middlesboro, Kentucky, on October 21 and 22. A team representing the Consolidation Coal Company, Jenkins, Kentucky, won 2nd place. A team representing the Eastern Coal Corporation, Stone, Kentucky, won third place.

In the first-aid division, the team representing the Inland Steel Company, Wheelwright, Kentucky, won first place. Second place was won by a team representing the Consolidation Coal Company, Jenkins, Kentucky. These contests were held under the auspices of the Kentucky Mining Institute in co-operation with the Kentucky Department of Mines.

Representatives of about fifty Mining-Equipment manufacturers are being asked to attend the special meeting of the Mining Electro-Mechanical Maintenance Association at the Bureau of Mines, Pittsburgh, December 9. The purpose of this meeting is to encourage manufacturers to prepare programs on care and maintenance of mining machinery of all kinds.



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Providing For The Safe Removal Of Men From A Section Of A Mine In Case Of A Fire

Over forty years' experience underground has convinced me that the best way of fighting fires in bituminous coal mines is to prevent them in the first place. The rigid enforcement by operating officials of company rules, mine law and regulative codes will go far toward this end. Also the workmen should be educated to recognize fire hazards and, if possible, eliminate them. They must be impressed too with the danger of fires to their own lives and to the property of the company which is, of course, their means of making a living.

In short an overall vigilance and alertness on the part of operating officials and workmen will do much to *lessen the probability* of fire in the mine which will, indeed, be well worth the time and effort involved.

But the best organization for preventing fires is not always one hundred per cent effective. Fires are inevitable in bituminous coal mines. To start a fire you must have something that will burn, some agency to supply the kindling temperature and air to support combustion. In the mine we have coal that will burn—if it didn't burn we would not be mining it. We have also other combustibles in the mine which we take in—timber, wood ties, oil, grease, empty rockdust sacks, and sandwich wrappings. All of which

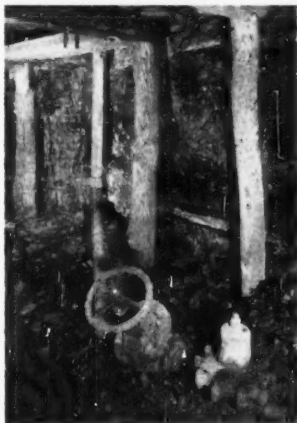
require a much lower ignition temperature than coal. To supply the kindling temperature we have the electrical circuits, bonding, welding and metal cutting tools. Then, of course, there is spontaneous combustion to be considered as a source of

three necessary ingredients for a fire.

The main purpose of mine law and regulative codes is the preventing of accidents. Mines have been known to operate for years without a single disabling accident. But they still keep First Aid supplies on hand and they continue to train their employees in the proper use of these supplies. Stretchers and injury treatment kits are placed at strategic points throughout the mine so that they may be available at the shortest possible notice. These mines also retain a doctor to be always on call in case of an accident and have arrangements made with a hospital so that a man injured in the mine may be admitted upon arrival. Why do they do this when they haven't been having anybody injured? They do it because they know that in spite of all they can do to prevent it some day they will have an accident and that the minimizing effect of proper preparation for taking care of the injured will amply repay them for the expense involved.

In the same manner we can be sure that we will have fires in our mines in spite of all we can do to prevent them. Somewhere along the line somebody will slip up—a set of conditions will arise that we did not foresee. The necessary ingredients will be there and you can bet your life you'll have a fire. Where? I wish I could tell you. When? I

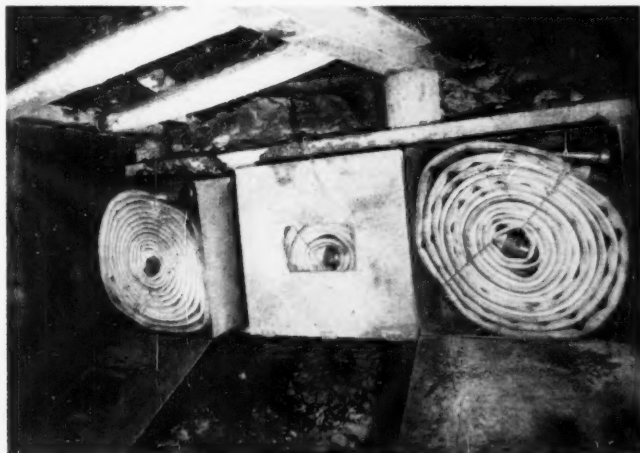
ignition which, incidentally, is a much maligned cause of fire, but one that cannot be entirely ignored. To support life, to dilute and carry away noxious gases we must have air in our mines. So there you have the



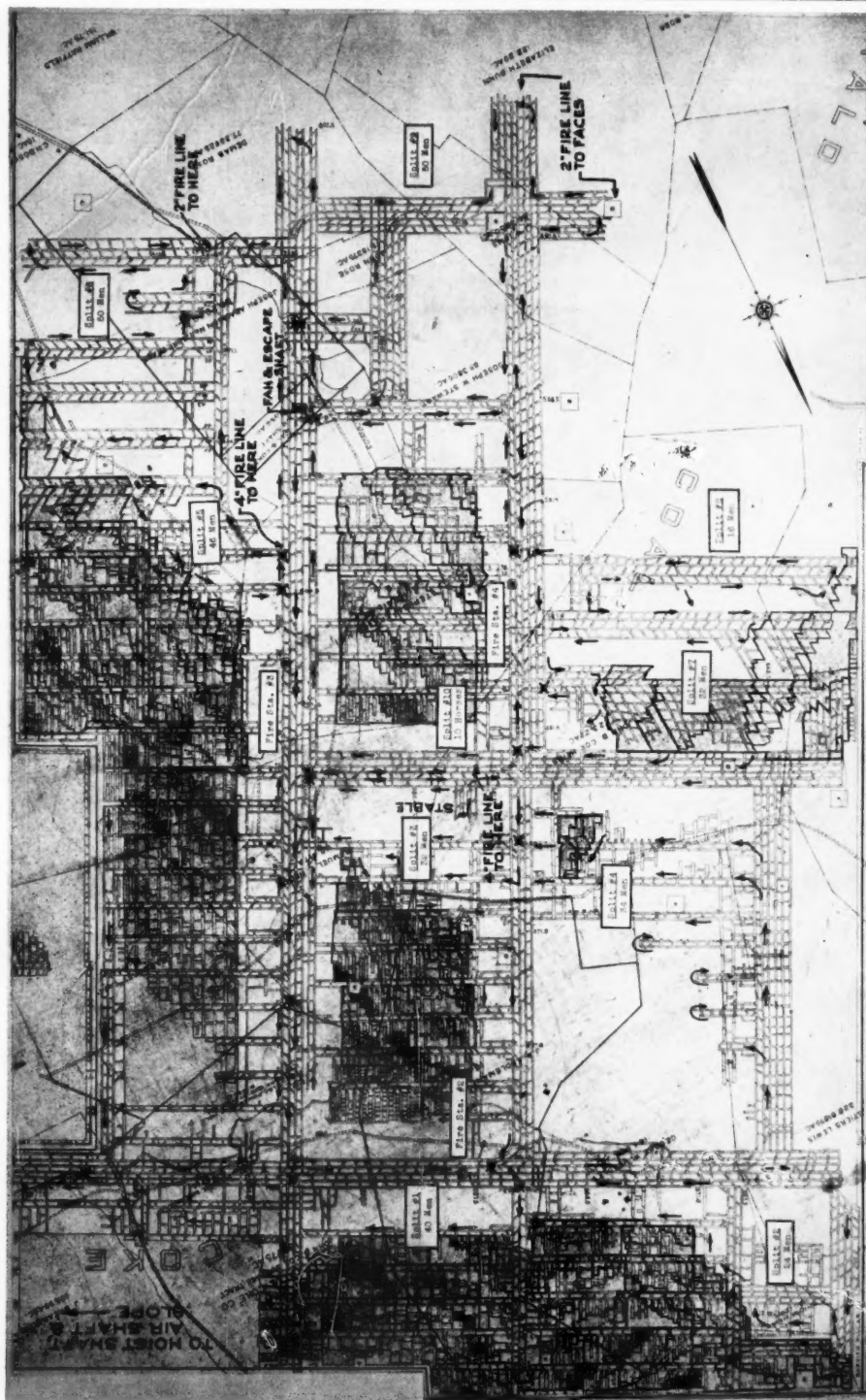
Water line entering mine through bore hole. Note valve and fire hose connection.



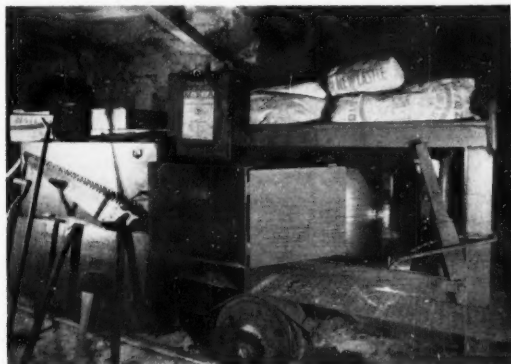
Valve and fire hose connection in entry.



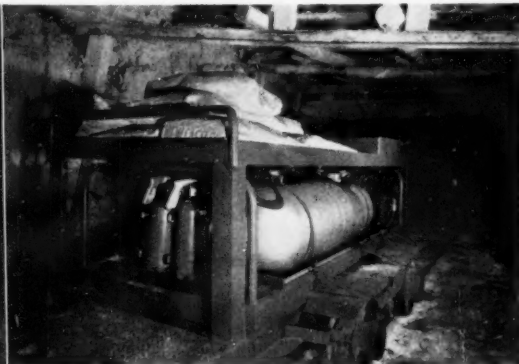
Fire hose is stored in metal boxes near each valve.



Map showing layout of mine discussed in this paper.



One side view of a Double Tank (Karbaloy) Fyr-Fyter unit with integral reserve fluid tank.



Another side view of the Double Tank (Karbaloy) Fyr-Fyter unit with integral reserve fluid tank.

wish I could tell you that, too. On second thought, maybe I can tell you where and when. It will happen whenever and wherever you have something that will burn, some agency to supply the ignition temperature and air to support the burning. In short, it will happen at any time, anywhere in the mine.

So at some time in the future you will have a fire in your mine. What are you doing about that fire now? What preparations have you made, or are you making to control and extinguish that fire when it comes—when and where it comes? Do you have any plans made? Do you have arrangements made to meet any eventuality? What about the probable damage to the property? What effect on production? What about the threat to human life? What about the men beyond the fire? How will they get out of the air poisoned by the fire to a safe place? Have you plans? Do the bosses know them? Do the men know them? To attempt to answer these questions is the purpose of this paper.

I have taken for an example conditions at a certain mine. The layout, as you see, is about the same, or nearly so, as most of the mines in the Pittsburgh coal field. I work at this mine as safety engineer. I want to outline for you the preparation we are making for a possible fire.

This mine is ventilated by two fans and air currents are divided into ten splits as shown. No. 1 Fan is occupied mostly in ventilating the main haulage roads on intake and adjacent abandoned workings and gobbed areas with its return. However, it does supply air for splits 1, 2 and 3. No. 2 Fan does the bulk of the face ventilation. The open area

between 1 West Main and 3 West Main is almost in balance between the two fans and the direction and amount of flow in these areas depends on outside temperature and barometric conditions.

The mining areas, 11 North and 14 North, ventilated by Split No. 1 are almost finished but when the mine worked a maximum of 40 men were employed on the split. Escapeways are maintained on either side of both fans, and an entrance point to the haulage is provided near the overcasts.

17 North and 22 North work alternately day and night so the maximum number of men at any time does not exceed 24. Here, again, entrance points are provided near the haulage. Travel ways between the sections are maintained in good order.

Split No. 3 traverses 15 and 13 Butts of 12 South. Here again travelways between the sections are maintained and entrance points to and from returns are provided near the bottom of the entries. 30 men are working on this split.

16 South and its environs constitute split No. 4 but at the present time only 18 Butt is working. 32 men are employed there. Escapeways are maintained to 12 South and via 17 or 16 Butts to 16 South. There are, also, two neutral headings—19 and 20 South as escapeways to 1 Main should there be trouble on 16 South haulage.

To fight fires on any of the preceding four splits FIRE STATION NO. 2 is in the process of being established at a point 400 feet outbye 12 South on 1 West Mains. This consists of a tile and concrete structure which will house a Fyr-Fyter Instant Fire Engine which has a 120

gallon tank capacity and is equipped with tools and accessories, which might be needed in fire fighting, also two all-service gas masks. It is mounted on a truck with wheels and can be readily moved by motor to any place needed. The chemical provided is "Karbaloy" which has proven very effective in "killing" fire instantly with a minimum of noxious fumes. It is also non-conductive in the hose stream at a distance exceeding 10 inches from a "hot" contact.

Split No. 5 services 31 to 38 Butts off 5 South. The return from this split is taken over the butt haulages on overcasts and entrance and exit doors are installed at or near each overcast. Travelways between the butts are maintained. 46 men are employed.

Split No. 6 covers 41 to 52 Butts off 2 South. 50 is the maximum number of men on this split. The butts are triple headings in order to keep the butt haulage neutral and carry the air in the outside entries. Entrance to the returns are provided at the bottom of each butt.

For fire-fighting service to these sections No. 3 FIRE STATION has been installed in the mouth of 25 Butt off 5 South. This, also, houses a fire engine similar to the one in STATION NO. 2.

On 5 South to 33 Butt a four-inch fire line has been installed with standpipes and valves every 500 feet. These valves are fitted with standard fire hose connections. Where this line comes down a borehole from a tank on the surface near the bottom of 5 South haulage, 300 feet of standard fire hose is stored in steel and glass containers. Water pressure is set at 125 pounds.

Split No. 7 traverses 19 and 21



Heavy-duty rock duster in Pittsburgh Coal Seam, Western Pennsylvania.

Butt Right of 12 South. 32 is the maximum number of men who work here at any one time. Entrance points are maintained near the butt beginnings and the headings parallel to the haulages can be used as travelways.

Split No. 8 ventilates 23 Butt Right off 12 South. Here, also, the butt haulage is kept neutral and escapeways are maintained at the bottom of the butt, to 21 Butt and through the returns to 12 South near 25 Butt. 16 men are the maximum number on this split at any time.

Split No. 9 traverses the main advancing faces of the mine, 10 West Mains, 12 South Faces and 5 South Faces. About 50 is the maximum number of men on this split at any time. Travelways on returns and intakes are maintained between sections and the haulage roads are kept neutral for a considerable distance from the faces.

Split No. 10 is a special split for the horse stable. At the present time there are 11 horses kept there. We hope in the near future when certain of our sections are finished we will be able to dispense with the horses entirely.

At 25 Butt on 12 South there is being established FIRE STATION NO. 4, which will contain a fire engine as in Stations 2 and 3. It will be quickly available for fire-fighting in the areas serviced by Splits 7, 8, and 9.

There is also a 2-inch fire line on 12 South with extensions almost to the faces of the various sections. Water pressure is set at approximately 125 pounds.

In addition to the foregoing preparation for fire fighting, rock dust storage places at strategic points have been established in amounts of 50 to 100 sacks of rock dust at each point.

In order that everybody concerned shall know what is required of them in case of fire, a plan—"PROCEDURE IN EVENT OF FIRE"—has been set up and copies under glass are being posted at all dinner holes, shops and lamp house bulletin boards as follows:

PROCEDURE IN EVENT OF FIRE UNDERGROUND

A. The person or persons who discover the fire shall:

1. If fire is of an electrical origin—Disconnect source of power at the nearest cut-out switch.
2. Attack fire directly with whatever means at hand—water, chemicals, rock dust, or sand. Approach fire from intake side.
3. Notify foreman in charge of area.

B. The foreman in charge of area shall:

1. Find out how serious fire is.
2. Have men removed who are working on return side of fire.
3. Notify dispatcher by messenger, telephone, or both, giving him all the information possible about the fire. If necessary, ask for supplies and help—fire engine, fire hose, rock dust, etc.
4. Direct attack on fire with means at hand.
5. If fire is in dead end such as a working place, erect line

brattice and approach fire from intake side. Remember that a fire must be ventilated.

6. Appoint 2 or more messengers to keep in touch with telephone.

C. The dispatcher on duty shall:

1. Send fire engine and other supplies as requested by foreman.
2. Notify Mine Foreman.
3. Notify Superintendent.
4. Notify Safety Engineer.
5. Keep in touch with progress of work at fire.

D. The Mine Foreman shall:

1. Proceed to scene of fire as quickly as possible to give foreman advice and help.
2. Check that all workmen have been removed from return side of fire.
3. Ascertain if return from fire can be shorted more directly into Main return.
4. Study location of fire against need for sealing off section of mine and be ready to order supplies for that need.
5. Arrange to send men not needed in fire-fighting to the surface.
6. Keep in touch with Superintendent through dispatcher at all times.

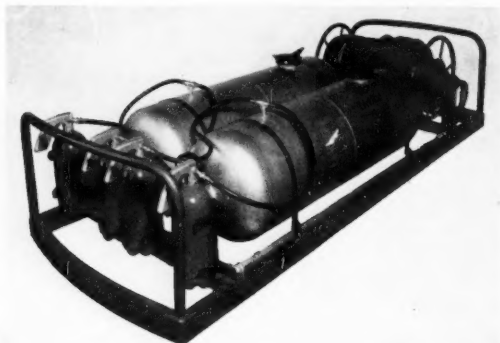
E. The Superintendent shall:

1. Keep in touch with dispatcher as to progress of fire-fighting.
2. See that needed supplies are furnished the fire-fighters.
3. Decide if helmet crews will be required for any special work.
4. Decide about notifying State Mine Inspector, Bureau of Mines, Main Office, etc.
5. Decide about necessity for sealing off fire and amount of territory to be sealed.
6. Have ready blue prints of portion of mine affected and mark off approximate location of seals.
7. Determine kind and quantity of supplies that might be needed and get them ready to be sent in.

F. The Safety Engineer shall:

1. Keep in touch with Superintendent as to fire progress.
2. Check breathing apparatus, gas masks, etc. Make sure they are ready for use if needed.
3. Get in touch with trained men and get crews organized.
4. Be ready to take crews to fire for any special work and direct them in that work.

In order that we can be absolutely
(Continued on Page 19)



Latest model double tank (Karbaloy) Fyr-Fyter unite equipped with individual SH C. O. 2 cartridges including two spare cartridges.

equipment. Representatives from the Safety, Insurance, Engineering, Operating and Electrical Departments were present at these tests, report of which is shown below.

"Electrical instruments were connected, as per sketch, and the test was conducted by playing the stream from the extinguisher upon a steel plate energized with 500 Volt D.C. potential. The extinguisher was grounded through the instruments to the rail return, thereby providing a positive ground."

"Results of the test were as follows:

<i>Distance</i>	<i>Karbaloy Fluid</i>
From 10 Feet to	
Within 20 Inches	No Current Flow
18"	10 Milli-Amps
10"	100 Milli-Amps."

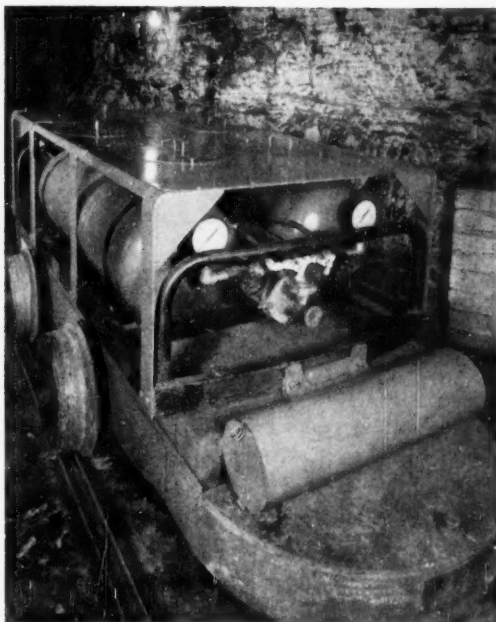
Since no fires are fought in a radius where any current flow is registered, this type extinguisher was

okayed by all Departments, including Safety and Insurance, for mounting on mobile equipment within their mines. An order was placed for several hundred of these units.

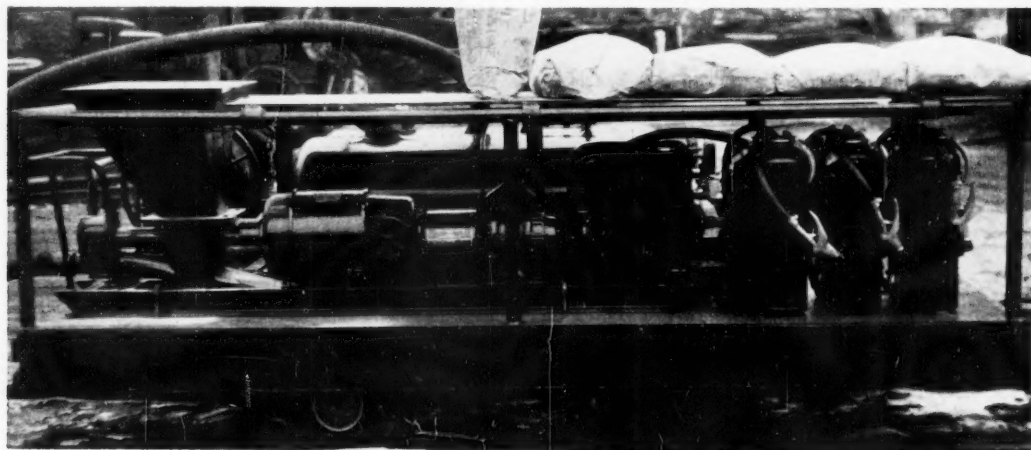
From the above tests, it might be construed that Karbaloy Fluid is the "cure all." Such, however, is not correct as in case of straight electrical fires or large flammable liquid fires that are little apt to fall into a

combustible fire, a smothering effect is necessary for proper control. These classes are more generally found in generating stations, electric control panel rooms, oil houses, confined spray oil areas, etc.

Note: Smothering type extinguishers are based on the principle of depositing an inert gas incapable of supporting combustion around and over the fire, thus blocking off the



Double Tank (Karbaloy) Fyr-Fyter unit mounted on mine car with protected top.



Double Tank (Karbaloy) Fyr-Fyter unit including Ansul guns and Rock dusting unit mounted on special mine car truck.

oxygen. This in turn (if sufficient gas is available) extinguishes the flame and the fire is out. However, as the atmosphere almost immediately replaces this gas, the fire will again flare up if there are embers present. Therefore, its recommended use is described directly above.

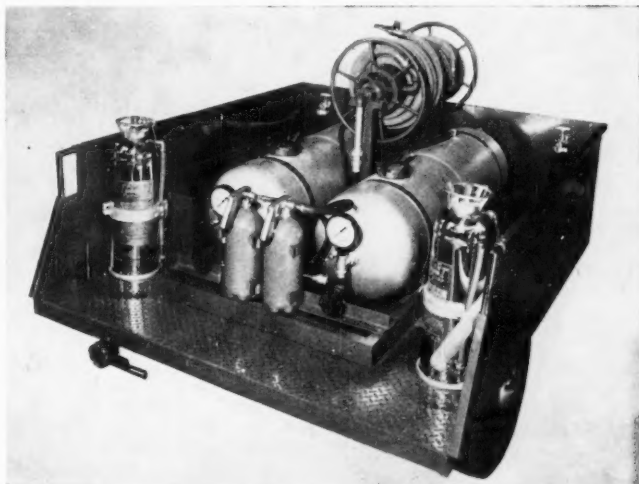
In those mines not piped for water at the face, serious consideration should be given to a larger size extinguisher to supplement the smaller 2½ Gallon Extinguisher mounted on the machines. There is also a definite need for a two-wheeled unit on the various levels of Tipples and Cleaning Plants to also supplement the 2½ Gallon Wall Mounted Type. Various types and sizes of extinguishers are illustrated in this article.

Conclusion

As fire protection is insurance, it is most necessary that serious consideration be given to the purchase of the proper equipment for its use intended so that in case of a fire, it cannot be said that "the insurance had lapsed."



Cut-Away of 1 and 2½ Gallon Instant (Karbaloy) Unit.



Special double tank (Karbaloy) Fyr-Fyter unit complete with Portable hand units and etc., mounted on trailer for use in mining communities.



Instant (Karbaloy) Units from 1 to 40 Gallon.

The new M.S.A. All-Vision Dust Mask which provides complete facial and respiratory protection against nuisance and harmful dusts is the subject of a one-page illustrated bulletin recently issued by Mine Safety Appliances Company.

Fitted with a lightweight, flexible all-rubber facepiece, the mask conforms snugly to the contours of the face, forming a comfortable, gas-tight seal. Easily adjusted head bands

secure the mask to the head without binding, facilitate quick attachment and assure wearer comfort.

This new M.S.A. Mask affords the maximum in low breathing resistance by means of a large-area, inexpensive, throw-away filter which can be quickly replaced as required. The filter container is sturdy, lightweight aluminum and is situated low on the mask for unobstructed vision.

Large, clear lenses permit natural, wide-angle vision, and lenses are protected from fogging by unique inner air deflectors.

For additional information on the M.S.A. All-Vision Dust Mask write for Bulletin No. CM-10 to this publication, or direct to Mine Safety Appliances Company, Braddock, Thomas, and Meade Streets, Pittsburgh 8, Pennsylvania.

Pennsylvania Statewide Bituminous Championship

First Aid Contest

In a close race, the first aid team of Pittsburgh Coal Company's Mine No. 123, Gray, Pa., won the seventh annual Pennsylvania Statewide Bituminous Championship First Aid Contest at Ebensburg, Pa., Sept. 10.

Thirty-six teams of seven men each, winners in regional contests held earlier, participated in the all-day affair which was highlighted by addresses by men prominent in the mining industry.

Dr. James A. Boyd, director of the U. S. Bureau of Mines said the teamwork such as that displayed by the contestants could be credited with reducing accidents in mines. The month of July, he added, was the safest month in mines in 1949. More than a million tons of coal were produced per fatality, a mark never before equalled in the industry.

Other speakers at the meet included Charles A. Owen, president of the National Coal Association; James Mark, president of District 2, United Mine Workers of America, and Dr. C. J. Potter, president of the Rochester & Pittsburgh Coal Co.

First aid teams were assigned three problems in the contest and were judged for efficiency, speed and accuracy of their work. Four teams tied for first place and were given two additional problems. These teams included Pittsburgh Coal Co., Mine No. 123, Westmoreland Mining Co., Watson Mine near Saltsburg, Pa.; Republic Steel Corporation, Indianola Mine, Indianola, Pa., and Duquesne Light Co., Coal Division, Harwick Mine.

Final results showed the Pittsburgh Coal team with a percentage of 99.867 plus out of a possible 100. The Westmoreland team was second with 99.867 and Republic Steel team third with 99.80.

The first place team received the MSA Trophy, awarded by George H. Deike, president of Mine Safety Appliances Company, Pittsburgh. All teams also received cash and merchandise awards.

Members of the Pittsburgh Coal team were Earl Kimmel, Captain, Alexander Harvey, Phillip D'Arrigo, Luther Fisher, Robert Kimmel, Robert Harvey and Steve Waszczak. On the Westmoreland team were Francis Maruschak, Captain, Nick Maruschak, Steve Pavlik, Denver

Bartlebaugh, John Bodnar, Anthony Cavacini and Joe Smelik. The Republic Steel team included Vince Stanec, Captain, George Cingle, Arthur Starnes, Robert Miller, Paul Yeloushan, Jr., Uriah Prosser and George Walker.

The contest, sponsored by the Pennsylvania Department of Mines in cooperation with the Pennsylvania Coal Operators Association, the U. S. Bureau of Mines and the United Mine Workers of America, was designed to stimulate interest in mine safety and to promote the excellent work accomplished last year in Pennsylvania bituminous mines.

W. Garfield Thomas, deputy secretary of the Pennsylvania Department of Mines, Bituminous Division, was general chairman. Co-chairman and director of the contest was Dennis J. Keenan, Pennsylvania State Mine inspector. J. V. Berry, manager of compensation and safety for Bethlehem Mines Corporation, was chief of judges.



George H. Deike (left), President of Mine Safety Appliances Company, is shown with the MSA trophy awarded the winning team in the seventh annual Pennsylvania Statewide Bituminous Championship First Aid Contest, held Sept. 10, at Ebensburg, Pa. Second place cup, presented by the National Coal Association, is displayed by Earl R. Maize, safety director of the Association.



Pennsylvania's championship bituminous mine first aid team is shown here. This team, from the Pittsburgh Coal Company's Mine 123, Gray, Pa., won out in a close contest among 36 regional teams at the statewide competition in Ebensburg, Pa. Members of the team are (left to right, front row) Phillip D'Arrigo, Earl Kimmel (captain), and Robert Harvey; (back row) Luther Fisher, Steve Waszczak, Alexander Harvey and Robert Kimmel. Capt Kimmel is holding the Mine Safety Appliances Company trophy awarded to the first place team.

Preventive Measures Are Available For Athletes Foot

It is to be regretted that there is no generally accepted routine for inspection for Athlete's Foot among employees in industry. Periodic inspection or checks could be used to good advantage because this condition can be serious and not just a nuisance. A United States Public Health Service Report discloses that a check of thousands of employees in several industries revealed that 81% of those examined suffered from this disease in some form during the summer months.

Actual lost time is only a portion of the loss caused by Athlete's Foot in industry. Lowered efficiency due to intense itching or burning of the feet results in wasted materials, slow-up in production, and may create an accident prone employee. In a fungus disease conference at the New York Academy of Sciences, Dr. Samuel M. Peck of Mt. Sinai Hospital reported that tests have shown that six out of every hundred people who have had a fungus infection will be barred from the life saving benefits of penicillin and streptomycin in case of serious illness. The explanation is that the fungus infections set up an allergic state.

Preventive measures are of prime importance among groups using shower rooms. Athlete's Foot spreads rapidly unless properly checked. Antiseptic solution in troughs is not the answer for it is almost an impos-

sibility to properly maintain the proper degree of concentration due to drippings from the body and contamination. Furthermore, the average person will not stand in such solution even when properly maintained for a sufficient length of time to kill the fungus. Steaming the floor and washing with disinfectants does not prevent spread of Athlete's Foot because the floor is sterile only until the first person crosses it.

Two methods developed for prevention of Athlete's Foot are proving successful in use at industrial plants—Peda-Spray, a self-contained dispenser giving an individual treatment of concentrated solution, and individual sterilizing powder. Peda-Spray is becoming more commonly used because of ease of treatment. By stepping on the grill of this steel, cookie-shaped mechanical device each user gets a fine spray of concentrated prophylactic solution from jets underneath the grill. It is just stepping on, marking time once or twice, and stepping off. In the use of powder, the employee rubs it between and under the toes of the feet.

If our civilized world went barefooted and exposed the feet to sun and air undoubtedly Athlete's Foot would be no problem. This being impossible, proper preventive measures are a must to further prevent the spread of this fungus pest.



Peda-Spray in Bath House

PROVIDING FOR SAFE REMOVAL OF MEN

(Continued from Page 14)

sure the foremen and key men know exactly what is expected of them in the event of fire in the mine, the supervisory officials have started on a system of checking and double-checking. If any are found wanting or unable to figure themselves out of a "tough" situation due to a fire, additional instruction and demonstration is to be given out.

Now we think and hope we are right in this business of preparing for a possible fire, and it is quite likely that we may have overlooked

something. If we have, we would like to know it, and hence invite criticism. We hope we have given somebody some food for thought.

We know that most mining companies are not overlooking this situation. They know what they are going to do about a possible fire. But I can tell you that anybody who doesn't know what they're going to do had better get busy and make up their minds they are going to have fires—that's certain and the damage they will do—the lives they will take will be indirectly proportional to the preparations they have made to meet the challenge of fire in their mines.—Thomas A. King, Safety Engineer, Emerald Coal and Coke Company.

A new bit designed especially for pin hole drilling is now being manufactured by Kennametal Inc., Latrobe, Pa. The cutting edge of this new Kennametal FD bit is solid Kennametal cemented carbide, and the shank and body is of tough forged steel construction. The bit is for rotary drilling single gauge holes in hard shale, hard slate, and laminated sandstone. Drilling speed is 10% to 20% faster than with pneumatic methods, according to the manufacturer. Free copy of Bulletin M-105, describing and illustrating the Kennametal FD bit for pin hole drilling, is available from Kennametal, Inc., Latrobe, Pa.

Bituminous Golfers Association Meet At the Greene County, Pa., Country Club

The Bituminous Coal Operator's Golf Association of Western Pennsylvania met at the Greene County Country Club, near Waynesburg, Pennsylvania, on Thursday, September 1.

This was the second meeting at that country club in the 1949 Season, and the final one of this

year. Mr. Allen Brookes, President of the Greene County Country Club, promised good weather and a good meal and the attendants got both. Color motion pictures were taken of the golfers in action for showing at the following party. After dinner the attendants were shown color motion pictures of previous meetings.



G. N. Rigg, Vice President in charge of operations, Weirton Coal Company, substituting for Allen Brookes, and announcing the date of the next meeting.



Claude Ferguson, Supt. of Underground operations, W. A. McBride, Jr., Supt. of Strip Mine Operations of the Jefferson Coal & Coke Co., and Henry Schweinsburg, President, Carbit, Inc. and Bill Schiffbauer, Master Mechanic, Buckeye Coal Co.



R. E. Edgar, Watt Wheel & Car Corporation, Bill Hover, Buckeye Coal Company and W. C. Wilson, Watt Wheel & Car Corporation.



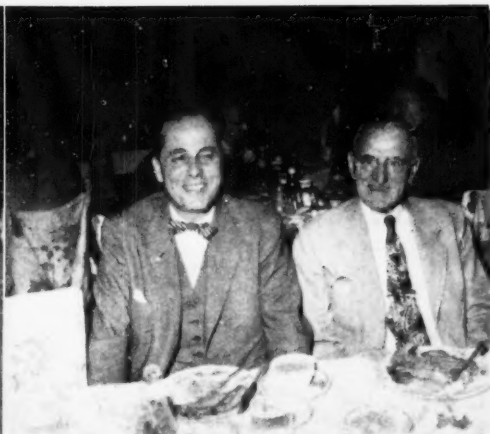
F. J. Reed, Chief Engineer, Republic Steel Corp., Dave Thomas, Westinghouse Electric Corporation, and G. L. Bolender, Electrical Engineer, Republic Steel Corporation.



On right, H. J. Lang, President, Industrial Electric Company, Washington, Pa.



Ray McGinty, Duquesne Light Company, H. E. Horner, Purchasing Agent, Baton Coal Company, and Leo Schulte, Mosebach Electric & Supply Co.



Max Lambert, Hewitt Rubber Company of Pittsburgh and J. E. Nieser, Manufacturers Representative, Pittsburgh, Pa.



Jim Ward, Ray Werner, and W. W. McClure, Sales Representatives of the Harris Pump & Supply Company.



Willis S. Drake, Sales Manager for COAL MINING, won a set of golf clubs.



Left to right: Jack Schroeder of the Schroeder Brothers, and Laurence Cope of the Oliver Iron and Steel Company.



Francis McQuillen, Ass't. to the President, West Penn Power Company, entertaining dinner guests. Bruce Diedel, Mine Foreman at Mather Collieries, in the foreground.

Strikes Can Be Prevented

"Know-How" Can Cure Friction

By MARJORIE VAN DE WATER

Science Service Psychology Writer

Psychologists and sociologists could help industry prevent strikes like the present work stoppage in the steel and coal industries. They have the necessary "know-how" to cure friction.

Strikes are symptoms of social sickness, just as fever is a symptom of physical disease. This is the opinion of psychologists queried by Science Service.

Modern doctors do more than give fever patients cooling baths to reduce fever. They go after the germs or other cause of the fever to get the patient well.

Social psychologists have better ways of treating social sickness than prescriptions for cooling off periods to avert strikes. They, like doctors of medicine, can diagnose the causes and apply remedies that will get the patient—in this case society itself—back on the road to health.

"Any attempt to prevent strikes by direct repressive action could at best only produce other symptoms of the same social illness," warns Dr. Dorwin Cartwright, director of the Research Center of Group Dynamics of the University of Michigan.

A commission of scientists to be sponsored by the Government is urged by Dr. Cartwright to diagnose the social illness through a scientific study of the major source of industrial tension.

A prescription for emergency treatment, suitable in situations such as the present crisis, is given by Dr. Francis Bradshaw, New York psychological consultant.

It is difficult, he points out, for the top men in a dispute to come to an agreement. Each feels that he cannot "back down" on any single point without betraying his constituents. And yet it is doubtful whether either top man in this case actually knows just what the men he represents might be willing to agree to.

The remedy, then is to bring together two groups, each one made up of representatives of each level in the hierarchies of management or of labor. On the one side the group would include the big boss and would

go down the line, bringing in plant manager, department superintendent, and down the line to the assistant superintendent or assistant foreman. The labor group should start at the top with the international president and his strategy chief, include the head of the plant local involved and should go down the line to the individual shop steward.

These two groups of about seven men each should be brought together for free discussion of the various problems involved. There is hope that it might develop that other issues are important in addition to that on which the deadlock has occurred. Some basis for conciliation or compromise might be brought out.

Setting the scene for these discussions is important, experience has shown. The meetings should take place away from the plant and from any reminders of respective status of the participants. The atmosphere of a courtroom and "witnesses" should be avoided.

It would be well to start each meeting with food and drink to put the participants in a relaxed and sociable mood. Distractions and reminders of the plant should be avoided by locking the doors.

A chairman should be selected who is not connected with either group, and he should discourage any "pussy-footing" on the part of any contributor in speaking his mind frankly.

The discussions should be implemented, when disagreements occur over facts, by sending out and ascertaining just what the situation is by use of scientific methods.

For example, in such a group in one plant, the question arose as to whether the men would be satisfied only with an increase in pay or whether what they wanted even more was a change in working conditions to avoid dust and chemical fumes.

Men were sent out to find out in an impartial, scientific way direct from the workers themselves what was most important to them. They, in large majority, indicated that dust and fumes were most important. Incidentally, the results obtained by this same group in improved conditions in the plant saved the company more than a million dollars in the first year.

But such proven methods for relieving industrial strife do take time. And it has been estimated that the nation cannot afford more than a limited time of a work stoppage like the steel strike. Thus, it would probably be necessary to secure the consent of both sides for the work stoppage to cease during the time necessary for the remedy to be applied. There is some doubt whether this could be arranged without force in the present case. And force is a bad preliminary to an attempt to find peace.

Strike Is Symptom

Underlying Disease Must Be Cured

By DR. DORWIN CARTWRIGHT

Director Research Center of Group Dynamics
University of Michigan

A strike should be conceived as a symptom of deeper and more complex social malfunctioning. This social illness has important causes stemming from economic and political institutions as well as from the behavior of individuals and smaller groups.

It is a characteristic of symptoms

that they cannot be satisfactorily eliminated by dealing with them directly. Action can and must be taken to prevent their getting out of hand; the patient's fever must be reduced. But future attacks of the disease will be certain to arise unless the underlying causes are dealt with. This means that any attempt to prevent

strikes by direct repressive action could at best only produce other symptoms of the same social illness.

Social science possesses the research tools needed for analyzing the social disease created by the current strike. The federal government could well afford to sponsor a commission of scientists to analyze specifically the causes underlying these recurrent strikes. Such a commission should examine the major sources of tension from the point of view of economics, sociology, political science, and social psychology. It would, of course, be devoted to the search for facts, and the discovery of cause and effects, and would, therefore, be in no sense partisan. Only through such a genuinely scientific diagnosis can an effective remedy be prescribed. Although there is no precedent for such a commission, research techniques and scientific knowledge have developed in recent years to such a level that a significant contribution to the reduction of tension in the coal and steel industries could now be made.

Known Science Techniques Work In Settling Industrial Disputes

By DR. FRANCIS BRADSHAW—
Consulting Psychologist.

Richardson, Bellows, Henry & Co.,
New York City

Experience in conciliation in cases of labor strife and also marital relations and other types of friction show that four techniques are effective.

1. The disputing parties may be brought together to tell their troubles to a counsel. The counsel refrains from telling them what to do, but directs the discussion in such a way that the parties concerned think out their own course and arrive at their own agreement.

This technique, known as "non-directive counseling" has proved very effective also in the treatment of the mentally disturbed, whose conflict is internal.

The difficulty in applying this method in industrial disputes is that in order for it to work, the counsel must be invited or sought out by both parties. In an industrial dispute, one or both sides may lack any desire to arrive at a settlement.

2. The second technique is to tell the disputing parties to try or

this or that so that they will arrive at their own solution through experiment. This technique also works better in reconciling married partners than industrial associates.

3. The third technique is to arrange a change in the conditions which are instrumental in producing the friction. Thus a change in economic or political conditions might make it easier for industrial strife to come to peaceful solution.

4. The fourth technique is to change the attitudes of the key individuals toward themselves and toward each other. It has not been widely used because it is so difficult to achieve. It is very difficult to change an adult's way of looking at things, his notions of what he wants to get out of life, his feeling toward other men. Still it is not impossible.

Here are some of the ways atti-

tudes can be changed.

One way to change a man's attitudes (and it is obvious in this case that somebody must change) is to search out the facts of the dispute by scientific methods.

Both sides in any industrial dispute must rely for strength in the show-down on the support of their constituencies and some of the public. Yet neither one actually knows what the men behind him really want. A scientifically conducted survey of what is wanted and needed by the stockholders, management and the public would show each the limits of support on his side and just what he might concede without betraying his trust.

Psychological research and practical application in industry has demonstrated the value of "vertically organized" round table discussion for

The Double - Roll Scottdale COAL CRUSHER

Really Sinks Its Teeth Into It!

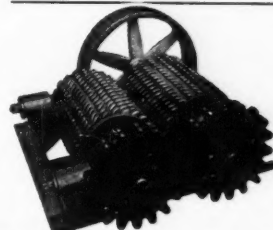


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That's right . . . the Scottdale double-roll Coal Crusher really sinks its teeth into the lumps of coal . . . the two rolls are set in a staggered position so that their teeth produce a shredding action on the coal. This Scottdale principle delivers a more uniform product and lowers the consumption and cost of power.

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producing attitude changes necessary to bring about industrial conciliation and peace.

This means bringing together not just the two top men in the dispute, but representatives of all the levels all the way down to the foreman who has direct contact with the workers and the shop steward who is the worker's adviser in dealing with management.

Such round-table discussions should be implemented with all the tools known to psychological science. Sometimes it is found that the words

basic to the discussion are not understood by those involved. In one situation, tests revealed that the average supervisor failed to understand 80% of the words used in the contract under controversy. The average union's shop steward missed 70%. Attitude tests given before and after discussion show that the participants do change their attitudes as a result of frank discussion in such a round table.

What is needed to prevent strikes is the determination by management to use systematically what is known

to science. They must realize that human nature is as real and important in their business as are dollars invested or machines and materials. They should pay as much attention and spend as much money on research in human and personnel relations as they do on product research.

Tension and hostility must be located and reduced before it piles up like static charges to produce an explosion and uncontrollable catastrophe.



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Smooth, effortless steering—without stopping the forward motion of the machine—with the cab in any position—that's OSGOOD Air-Controlled Steering! Independent air cylinders, actuated by a small lever in the cab, disengage and set steering brakes on the driving sprockets instantly, eliminating the need to hunt for a point where a steering lock can be engaged.

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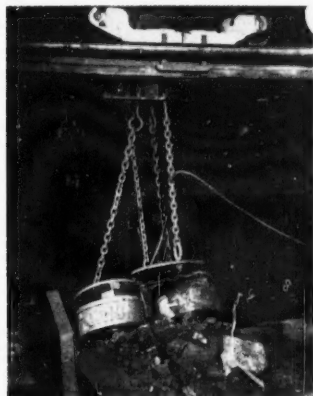
A new bit for drilling hitch holes has been announced by Kennametal, Inc., Latrobe, Pa. Bit drills 9 1/4" diameter holes, takes out 7 1/4" core. Ten finger bits with Kennametal cemented carbide tips are set in the cutting face of the bit. The Kennametal Hitch Hole Drill Bit can be used on any mounted drill that has a capacity of 5 h.p. or more, and according to the manufacturer, requires almost 2/3 less power than other methods and drills 20% to 30% faster. In operation, the Kennametal hitch hole bit is used to drill a hole 3 ft. deep in one rib and a hole 1 1/2 ft. deep in opposite rib. Timber or cross bar is inserted in the 3 ft. hole, lined up with the entrance to the shorter hole opposite, then moved into the shorter hole and wedged. No upright supports are needed. In average coal, the drilling rate is from two to three feet per minute.

Free Bulletin No. M-104, describing and illustrating the new Kennametal bit for hitch hole drilling, may be obtained from the manufacturer, Kennametal Inc., Latrobe, Pa.

How steel studs can be driven instantaneously into steel, masonry, or concrete with the M.S.A. Velocity-Power Driver is told in a new 4-page bulletin No. TA-17 published by Mine Safety Appliance Company.

Cost reduction up to 60% over conventional stud-placing methods can be achieved through use of the M.S.A. Driver, says the manufacturer.

Weighing less than 5 lbs., the M.S.A. Velocity-Power Driver uses the energy of a blank cartridge to penetrate steel, to join steel to concrete, wood to concrete, or steel to steel without drilling, plugging, or old-fashioned studding methods. To operate the Driver, the cartridge assembly is inserted, the barrel is screwed into the firing unit, and the Driver is placed over the work and fired.



The Homer Manufacturing Company, Inc., Lima, Ohio, is manufacturing a Power-Plus non-electric Permanent Magnet Pulley that is guaranteed to equal or exceed the strength and permanence of an electro magnetic pulley of the same size and capacity. These pulleys are designed for use as head end pulleys or as idler pulleys in belt conveyor systems and come in 57 standard sizes in diameters of 12", 15", 18", 20", 24", and 30" with belt widths ranging from 4" to 60".

A grinding jig for dressing and servicing Kennametal cemented carbide-tipped mining machine bits is now being manufactured by Kennametal Inc., Latrobe, Pa. The jig is mounted under any standard double-end grinding machine, and mechanically sets and controls the grinding angles. According to the manufacturer, the jig automatically prevents undergrinding or overgrinding. Mining machine bits can be reconditioned much faster, and with far less physical effort, than by manual grinding. It has been found that mining machine bits reconditioned in the Kennametal grinding jig give more service life because they are actually ground, with a uniform finish.

Free copy of Bulletin No. M-106, describing and illustrating the Kennametal machine bit grinding jig and its operation, are available from the manufacturer, Kennametal Inc., Latrobe, Pa.

The many advantages offered by the M.S.A. Mobile Safety Stations to the mining industry in mine rescue, first aid, and instructional work are fully illustrated and explained in a four-page bulletin recently issued by the Mine Safety Appliances Company. More economical to operate than stationary rescue stations, M.S.A. Mobile Safety Units



Morse
Roller
Chain
Drives



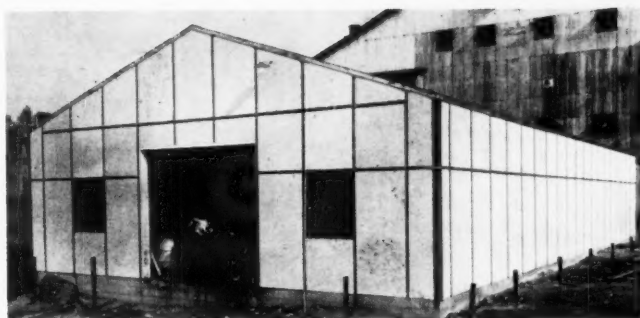
Morse Silent Chain Drives



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Bridgeville, Pa.

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A Caterpillar Diesel D-13000 Engine powers this Marion Shovel working in an open pit mine 12 miles south of Marshall, Texas. A Caterpillar Diesel D-17000 Engine powers the P & H Dragline Shovel visible in the upper part of the picture.



A Caterpillar Diesel D-13000 Engine powers this Marion Shovel working in an open pit mine 12 miles south of Marshall, Texas. A Caterpillar Diesel D-17000 Engine powers the P & H Dragline Shovel visible in the upper part of the picture.

are equipped with every essential for safety, and provide the necessary service when and where it is most needed.

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Additional M.S.A. Mobile Safety Stations are furnished according to customer specifications, and are available with various sized bodies and chassis lengths. The school-bus body type is a popular model because of its well-reinforced construction and low center of gravity permitting greater speed. All models are offered complete with the very latest idea for efficiency. Typical models now engaged in official service are pictured in the bulletin, with the back cover illustrating a variety of Safety Equipment carried in the Mobile Station. The bulletin, No. BH-5, may be secured by writing this publication or direct to Mine Safety Appliances Company, Braddock, Thomas and Meade Streets, Pittsburgh 8, Pa.

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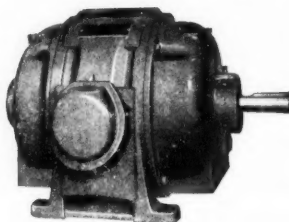
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Photographed in Southern Illinois coal fields by William Vandivert

Perhaps you've never thought of a coal mine as a piece of real estate. But a glance at the map of a mine hung in this foreman's office underground makes clear the geographical similarity between a city area and the mine workings. It shows in detail every "street," railroad and passageway—covering several square miles *under the earth's surface*.

To the eye of the mining engineer, a map like this translates itself into a bigger investment in property than many a desirable residential section. It marks the expenditure of millions of dollars for railroad track, conveyor belt, timbering, and elevator and ventilating shafts.

All of this planning, construction and equipment is designed to produce coal efficiently, economically and in quantity enough to meet any demands. All of it represents a carefully calculated program of engineering and investment—running into billions of dollars—which assures everyone of coal easy to buy, efficient and economical to use.

Aboveground, too, modern mines represent a far cry from the "pick and shovel" days. To produce "prescription coals," free from loose impurities and blended and treated to meet customers' specifications, mine operators have built million-dollar preparation plants. Among new preparation plants now under construction is one designed to wash and grade coal at a record rate of 2,000 tons an hour. Modern coal mines employ almost as many skilled "miners" aboveground as below—and *all* receive the highest hourly wages paid by any major American industry.

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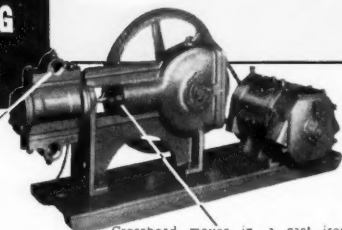
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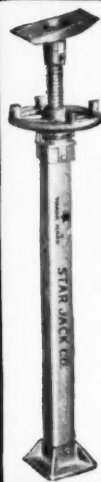
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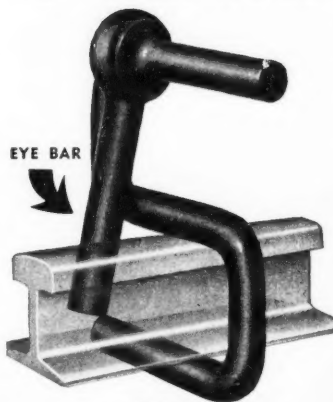
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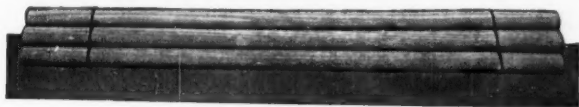
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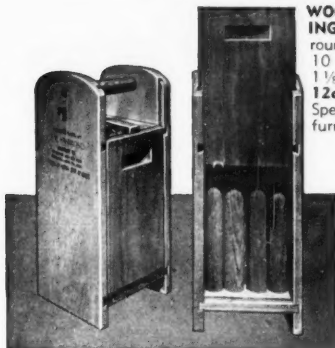
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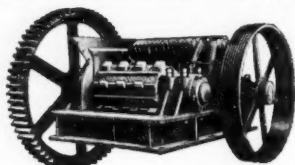
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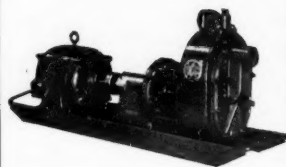
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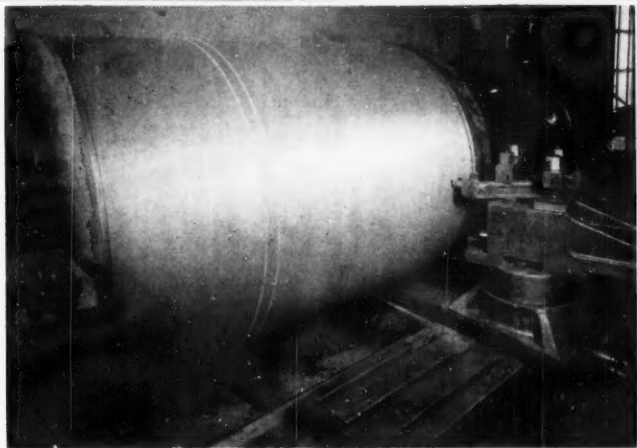


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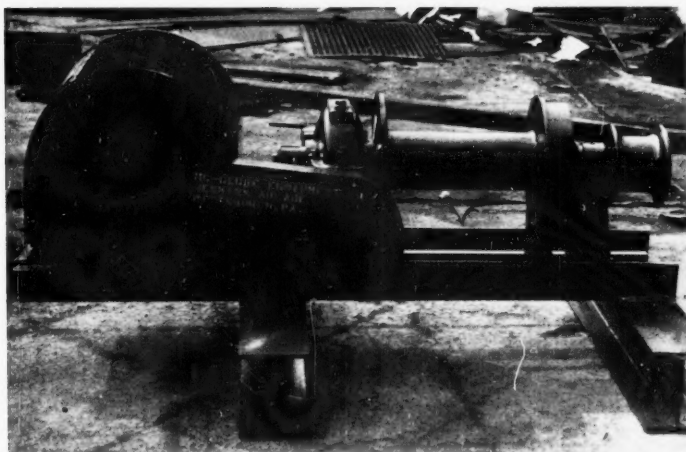
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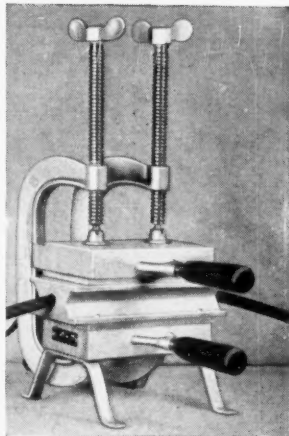
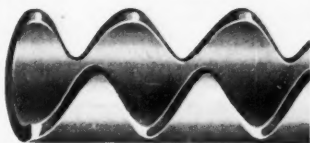
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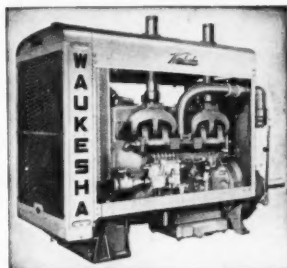
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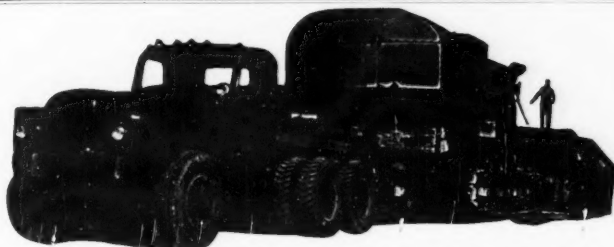
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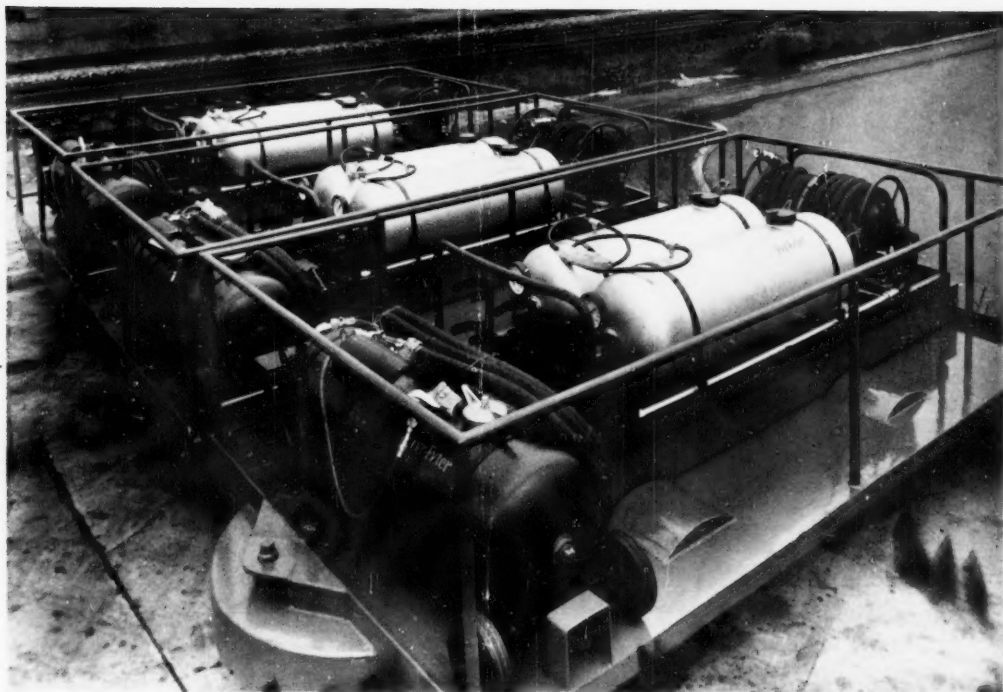
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How to stop a mine fire **FAST**

You are looking at the most effective fire engine ever developed for coal mines . . . the justly famous *Fyr-Fyter* mine engine.

The extinguishing agent is *Karbaloy*, an amazing patented liquid chemical that kills even deep seated fires with amazing speed. Furthermore, *Karbaloy* won't freeze in exposed locations . . . is effective on wood, coal, and flammable liquids . . . and doesn't deteriorate with age.

The cars you see here were specially built for one of the largest mine operators in southern

West Virginia. Each car has a double tank *Fyr-Fyter* mine engine plus a portable *Fyr-Fyter* engine with a single tank for use in areas not reached by tracks.

These particular mine cars are equipped with reserve capacity equal to two additional tanks.

This reserve *Karbaloy* is stored below the visible tanks and is pumped into the tanks by hand pump.

The *Fyr-Fyter* mine engine is the most talked about fire protection equipment for mines on the market today. Write for full facts and particulars.

THE FYR-FYTER COMPANY
351 Crane Street, Dayton, Ohio



Fyr-Fyter *Fire Extinguishers*